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ABSTRACT

The relative effects of imagerial covert rehearsal with attentional shifts and the use of an independent reinforcing agent in a covert reinforcement therapy were compared. A 17-year-old female student, requesting treatment for a snake phobia, served as the subject. The phobia was measured along four dimensions: behavioral approaches to a live snake, disruptive snake thoughts, anxiety ratings, and dream recall reports. After a three-week period of baseline, therapy was divided into four alternating three-week sequences of covert rehearsal and covert reinforcement, identical except for the use of the independent reinforcing stimulus in the covert reinforcement sequence and the use of a neutral stimulus in the covert rehearsal sequence. After 12 weeks, the client improved markedly in all but the subjective anxiety ratings, and a modeling and guided participation treatment phase was instituted. The results showed that the client was effectively and rapidly counter-conditioned. Also, one index of behavior change (the behavioral approach test) indicated a greater rate of progress during the covert rehearsal sequence than during the reinforcement sequences of therapy. (Author)

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Exploring the Effectiveness of Reinforcement in Covert Reinforcement Therapy: A Case Study[1]

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Exploring the Effectiveness of Reinforcement in Covert Reinforcement Therapy: A Case Study[1]

The behavioral technique of covert reinforcement has been used successfully to treat clients with animal phobias within an experimental paradigm (Blanchard & Draper, 1973; Flannery, 1972). In employing this procedure a client is instructed to imagine him/herself performing a target behavior and then to imagine a contingent "reinforcing" stimulus, usually a pleasant scene chosen by the client and one which can be quickly visualized (Cautela, 1970). The application of this technique is based on the assumption that stimuli presented through verbal instructions to imagine a scene have a functional relationship to overt and covert behavioral changes similar to that of stimuli presented externally (Cautela, 1970). Some experimental data have tended to support this notion (Baron, 1975; Blanchard & Draper, 1973; Cautela, Walsh, & Wish, 1971; Flannery, 1972; Tondo, 1975; Wisocki, 1973).

In examining the practical details of the covert reinforcement technique, as well as the parameters of other behavioral techniques, however, such as modeling (Bandura, 1965), systematic desensitization (Wolpe, 1973) and implosive therapy (Stampfl & Levis, 1967) an element common to all of them is the imagerial <u>rehearsal</u> of the desired goal behavior and the

attention shift between cognitive or behavioral sets (Wilkins, 1973). Experimental data from Leitenberg (1970) lend additional support to the idea that the practice of the target response is a variable critical to successful behavioral change.

The purpose of this study was to attempt an empirical examination of two of the parameters (imagerial rehearsal and imagerial reinforcement) in the covert positive reinforcement technique. Specifically, we were interested in the efficacy of the contingent use of an imagerial reinforcer in comparison with the rehearsal of successful performance in imagination. The study was carried out within the context of a normal therapeutic endeavor at a university-based outpatient clinic.

Client.[2] The client was a 17-year-old female undergraduate who maintained that she had experienced a snake phobia for 13 years. During the initial interview the client was extremely anxious and tearful whenever the word "snake" was mentioned. The client reported that at the present time nearly all aspects of her life were disrupted by her fear of harmless snakes. She was unable to leave her room to attend school or social events for fear of encountering a snake; she suffered from recurring nightmares of snakes; while in bed she often imagined that the wrinkles in her bedsheets were snakes. The client reported that she had been afraid of snakes since early childhood. Her fear of snakes was frequently the subject of peer

teasing during elementary and secondary school years and of severe maternal punishment.

Method. During the initial few weeks of contact, because of the rather dramatic extent of the client's fear, it was necessary to train her in relaxation procedures in order to decrease her anxiety and pursue adequately the definition of the problem. After detailed consultation with the client, we determined that the goals for therapy were the following: (1) to reduce her disruptive thoughts about snakes; (2) to reduce the number of snake nightmares; (3) to become more relaxed in general; and (4) to be able to touch a snake. However, the client indicated that "touching a snake" was an impossible goal for her.

Baseline measures were taken during a subsequent three-week period. The phobia was measured along three dimensions: (1) The client was given a wrist counter and asked to record the daily number of disruptive thoughts she had about snakes. Disruptive thoughts were defined as any which interfered with ongoing activities. During the baseline period the client recorded an average of 143 such thoughts per week; (2) The client was asked to perform a behavioral approach test, designed after that of Bandura, Blanchard, and Ritter (1969), which consisted of 35 tasks arranged hierarchically from least to most threatening interactions with a snake. The

tasks ranged from standing outside the room where the snake, a four-foot Columbian boa constrictor, was located in an enclosed box, to touching, playing with and wrapping the snake around the neck. On the pre-test, with encouragement from the therapist, the client was only able to remain outside the room where the snake was confined; (3) Before and after the administration of the behavioral approach measure, the client rated her anxiety, on a scale of 100 points, on 40 items dealing with the viewing of live snakes and still photographs of snakes; (4) The client was given dream recall forms to record and code all her dreams into one of five categories: positive, negative, or neutral nonsnake dreams and negative or positive snake dreams. During this period, 30% of the dreams recalled by the the client were negative dreams of snakes (nightmares).

Treatment phases. The treatment program consisted of alternating four sequences of covert rehearsal and covert reinforcement for three weeks apiece over a 12 week period. Both procedures were identical in detailing the approach behaviors toward the snake and the client's successful performance. In all phases the client was asked to relax and imagine a particular scene as vividly and as clearly as possible, while trying to experience herself actually approaching the snake. After one scene was described by the therapist, the client was asked to visualize the same scene by herself. Each

set of three scenes was assigned for homework practice four times a day.

The procedure differed only in the use of the independent reinforcing stimulus. In the covert reinforcement phases the client was instructed to shift the imagery and focus for five seconds on a pleasurable item selected by her from her responses to the Reinforcement Survey Schedule (Cautela & Kastenbaum, 1967). In the covert rehearsal phases she was told to shift the imagery and focus on a randomly determined three-digit number (neutral stimulus) for five seconds. Thus, the relative effects of each treatment phase were made comparable.

Each scene employed in treatment contained four shifts. All scenes were designed around different aspects of the client's phobia: her dreams, thoughts and fantasies, and reactions to her immediate environment. Two completely different sets of scenes were devised and introduced during the rehearsal phases of treatment.

An example of a scene used in therapy is:

> PET SHOP SCENE: Imagine yourself entering a pet shop. As you walk in you see aquariums containing many diverse and colorful fish. An earthy odor fills your nostrils. You can hear the water bubbling from the fish tanks. You are

fascinated by the many varieties of fish and their beautiful colors. You are feeling good and relaxed. You walk to another section and see several large snakes in cages. You say to yourself: These animals are really quite attractive. (shift - # or S^r). You look closer and you can see one moving. You are relaxed and you know that the snake can't hurt you. (shift - # or S^r). It is slowly curling on a branch. You admire the snake's grace and colorfulness. (shift - # or S^r). You are relaxed, confident, and intrigued by the snake's pattern and movements. (shift - # or S^r). You decide to move to other areas of the pet shop to observe the other animals. You feel good and confident about yourself.

After each treatment phase was completed, behavioral measures were taken of the client's approaches toward the live snake. Before and after each test, the client rated her subjective feelings of anxiety on a 40-item scale of 100 points which involved viewing live and inanimate snakes. She also continued to record her dreams and the number of disruptive "snake thoughts" that occurred every day. The number of disruptive thoughts was tallied every week and the behavioral approach measure was recorded every three weeks.

Results and Discussion

Behavioral measures. A rapid rate of therapeutic progress was found as measured by the two behavioral indices. As Figures 1 shows, the client averaged 143 disruptive snake

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Insert Figure 1 about here

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thoughts during the baseline period and after 12 weeks of treatment, these disruptive thoughts decreased to about nine. Similarly, during the three-week baseline, there were no behavioral approaches toward the live snake. After 12 therapy sessions, the client engaged in 27 approach responses which included touching the snake. Thus, according to the behavioral measures, the behavior therapy program was highly effective.

Concerning the experimental objectives of this study, when the client's progress was examined during specific three-week sequences (see Figure 1), there was a faster rate of progress as measured by the behavioral indices during the rehearsal periods (21 steps) than during the reinforcement phases (six steps). Furthermore, as Figure 1 illustrates, there were no apparent differences in the reduction of disruptive snake thoughts between the rehearsal and reinforcement periods. During both sets of sequences, the number of disruptive thoughts was greatly reduced (57% for covert rehearsal and 63% for

covert reinforcement). Thus, it appeared that the introduction of an independent reinforcing stimulus had little, if any, effect along one measure; and that, in fact, the client's progress was faster during the rehearsal than reinforcement phases for the behavioral approach measure.

Within the limits of this study, however, neither of the behavioral measures indicated that the addition of an independent reinforcing stimulus to the covert rehearsal of successful performance was necessary for increasing non-phobic behavior. The behavioral approach measure indicated that simply imagining the successful performance coupled with an imagery shift (to numbers) was more effective in increasing behavioral approaches to the phobic object than when the imagery shift was to the presumed "reinforcing stimulus." It may be tentatively concluded that the imagerial rehearsal and attention shifts were sufficient to produce overt and covert behavioral changes, indicating that successful performance and attentional shifts (Wilkins, 1973) were the more effective change agents.

Anxiety self-rating measures. The self ratings of anxiety about viewing live snakes demonstrated little change from the baseline ratings. In fact, there was remarkable consistency across the baseline and treatment phases. On a scale of 100 points the client rated her anxiety of items concerned with watching a live snake in the 90's, and of items involving

viewing pictures of snakes in the 50's. It was clear that tne client continued to experience high levels of anxiety before and after each behavioral approach test, although she had shown remarkable progress and at one point even touched the snake.

Given that this measure indicated no change in the client's self-reported anxiety about snakes, an additional treatment phase was administered. This phase followed the procedures outlined by Bandura, Blanchard and Ritter (1969), which employed live modeling and guided participation.

Toward the end of this treatment phase, the client participated in all the steps of the behavioral approach test (35 steps). She freely handled and played with the snake. Subsequent to this phase, the client's anxiety ratings dramatically decreased. The viewing of live snake items was rated below ten, and items which involved watching pictures of snakes were rated below three points. It was clear that the client was no longer anxious as measured by the anxiety ratings and the other two behavioral measures.

These anxiety ratings added a significant dimension to the treatment and understanding of the client. It was important to monitor the client's progress not only behaviorally but emotionally and cognitively as well. Prior to the introduction of the modeling procedures, the ratings indicated that

the client continued to experience high levels of anxiety and that she considered herself phobic, despite the measured progress in other dimensions. It was not until there was considerable direct experience with the phobic object that a change in her self attitude about being fearful occurred and that the phobia was effectively counter-conditioned on all levels.

Dream recall reports. For 18 weeks, the client reported and coded 60 dreams. Of these, 35% were positive, 20% were negative and 35% were neutral dreams not involving snakes. Five (or 8.3%) of the dreams were nightmares involving snakes (snake negative) and one (1.7%) was a positive snake dream.

Table 1 indicates the frequencies and percentages of dreams recalled during the specific three stages of therapy and coded along the five categories. During the last three

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week stage of therapy there was a marked contrast to the base-line stage. Positive non-snake dreams increased to 60% (N = 29); there were no negative non-snake dreams nor any snake nightmares, and there was even a positive snake dream. A review of the client's dreams indicated that the content and frequency of nightmares had been affected by the treatment

program. The client reported fewer nightmares during all the stages of therapy than during the three-week period of baseline. Also the therapy seemed to affect the content of the snake nightmares along self-assertive, emotional and behavioral dimensions.

Follow-up. Two follow-up sessions were conducted; one, a month after the termination of the treatment program and the other, six months later. At the first follow-up session the client reported increased feelings of personal worth and self-confidence. She also stated that her nightmares of snakes had ended; and she demonstrated her fearlessness of snakes by playing with the boa constrictor and enthusiastically cooperated in making a video-tape of her successful interaction with the snake for use with other snake-phobic individuals.

Six months later the client reported no recurrence of her fear or disruptive thoughts and nightmares. She indicated that several times she had played with a friend's boa constrictor and had seen grass snakes around her home with no subsequent fearful reactions. Twelve months later the client was still boasting of her fearlessness and detailing positive experiences with snakes.

Conclusions and Implications.

In considering the experimental question of this study, neither of the behavioral measures indicated that the use of

an independent reinforcing stimulus following the covert rehearsal of successful performance was more necessary than the use of a presumed neutral imagery shift. In fact, with one measure (the behavioral approach test) the use of a presumed neutral imagery shift after successful covert performance appeared more effective than a shift to the "reinforcer." Thus, attention shifts and successful performance appeared at least as effective as the presumed "reinforcing" agents.

The implications of these results question the usefulness of a "reinforcing stimulus" in covert behavior therapy. However, in the absence of conclusive data, these explanations must remain speculative. It is clear that further research into the imagery techniques is warranted to study the specific variables responsible for effective behavioral change and to develop sensitive dependent measures that can effectively monitor the client's overt and covert behavioral progress in therapy.

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Footnotes

[1]A portion of this paper was previously presented at the convention for the Association for the Advancement of Behavior Therapy, Chicago, Illinois, November, 1974. The authors wish to thank Bruce Butler for the use of his pet Columbian Boa.

[2]The client had no knowledge of the specific experimental nature of the study. She was informed that the therapy would employ a variety of behavioral techniques.

Table 1

Frequency and percentages of dreams reported and coded by client during the six three-week stages of therapy

Coding Categories for Dreams	Three week stages of therapy					
	Baseline	Covert Rehearsal	Covert Reinforcement	Covert Rehearsal	Covert Reinforcement	Modeling & Participation
Positive non-snake	10% n-1	31% n=4	33% n=4	25% n=1	33% n=2	60% n=9
Negative non-snake	10% n=1	38% n=5	42% n=5	25% n=1	-- --	-- --
Neutral non-snake	50% n=5	31% n=4	17% n=2	50% n=2	50% n=3	33% n=5
Negative snake	30% n=3	-- --	8% n=1	-- --	17% n=1	-- --
Positive snake	-- --	-- --	-- --	-- --	-- --	17% n=1
Total	100% n=10	100% n=13	100% n=12	100% n=4	100% n=6	100% n=15

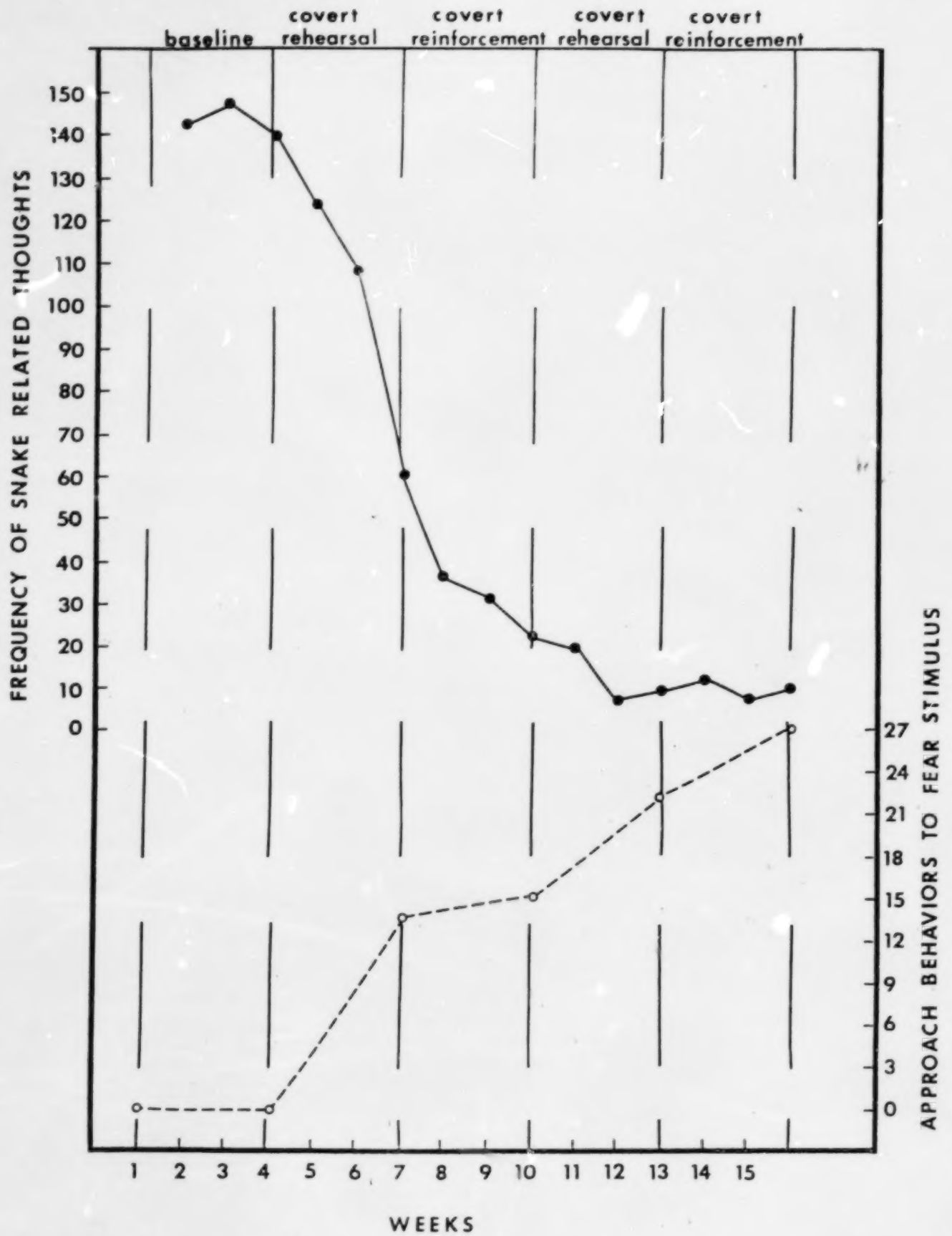
baseline
covert rehearsal
covert reinforcement
covert rehearsal
covert reinforcement
FREQUENCY OF SNAKE RELATED THOUGHTS
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
APPROACH BEHAVIORS TO FEAR STIMULUS
27
24
21
18
15
12
9
6
3
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
WEEKS

Figure Captions

Figure 1. The effects of sequential treatment phases on the frequency of disruptive snake-related thoughts and approach behaviors to the fear stimulus.